

THE ASTROPHYSICAL JOURNAL
CONTENTS OF VOLUME 364, PART 1

1990 NOVEMBER 20, Number 1

	Page	Fiche
X-RAY STUDY OF SUPERCLUSTERS <i>M. Persic, K. Jahoda, Y. Rephaeli, E. Boldt, F. E. Marshall, R. F. Mushotzky, and G. Rawley</i>	1	194-A12
PRIMORDIAL NUCLEOSYNTHESIS OF INTERMEDIATE-MASS ELEMENTS IN BARYON-NUMBER-INHOMOGENEOUS BIG BANG MODELS: OBSERVATIONAL TESTS <i>T. Kajino, G. J. Mathews, and G. M. Fuller</i>	7	194-B6
NEW OBSERVATIONS AND GRAVITATIONAL LENS MODELS OF THE CLOVERLEAF QUASAR H1413+117 <i>R. Kayser, J. Surdej, J. J. Condon, K. I. Kellermann, P. Magain, M. Remy, and A. Smette</i>	15	194-C1
MICHIGAN 160: INTERNAL KINEMATICS AND THE COSMIC DISTANCE SCALE <i>L. Staveley-Smith, J. Bland, D. J. Axon, R. D. Davies, and R. M. Sharples</i>	23	194-C11
CLUES ON THE HOT STAR CONTENT AND THE ULTRAVIOLET OUTPUT OF ELLIPTICAL GALAXIES <i>Laura Greggio and Alvio Renzini</i>	35	194-D12
H I ABSORPTION AND OH EMISSION IN IC 694/NGC 3690 <i>Willem A. Baan and Aubrey Haschick</i>	65	194-G1
MOLECULAR AND ATOMIC HYDROGEN LINE EMISSION FROM STAR-FORMING GALAXIES <i>P. J. Puxley, T. G. Hawarden, and C. M. Mountain</i>	77	195-A1
ULTRAVIOLET OBSERVATIONS OF NGC 205 <i>Eric M. Wilcots, Paul Hodge, Paul B. Eskridge, Francesco Bertola, and Lucio Buson</i>	87	195-A13
MOLECULAR ABSORPTION BY THE DUST LANE AND NUCLEAR REGION OF CENTAURUS A <i>E. R. Seaquist and M. B. Bell</i>	94	195-B8
THE EVOLUTION OF A SYSTEM OF STARS IN AN EXTERNAL ENVIRONMENT <i>Henry E. Kandrup</i>	100	195-C1
LINEAR REGRESSION IN ASTRONOMY. I. <i>Takashi Isobe, Eric D. Feigelson, Michael G. Akritas, and Gutti Jogesh Babu</i>	104	195-C7
MAP-BASED TRIGONOMETRIC PARALLAXES OF OPEN CLUSTERS: THE PLEIADES <i>George Gatewood, Michael Castelaz, Inwoo Han, Timothy Persinger, John Stein, Bruce Stephenson, and William Tangren</i>	114	195-D5
A COLOR GRADIENT IN THE SOFT X-RAY DIFFUSE BACKGROUND <i>S. L. Snowden, J. H. M. M. Schmitt, and B. C. Edwards</i>	118	195-D11
INTERSTELLAR PROPAGATION EFFECTS AND THE PRECISION OF PULSAR TIMING <i>R. S. Föster and J. M. Cordes</i>	123	195-E4
VARIATIONS IN THE ABUNDANCE OF TRANSIENTLY HEATED PARTICLES WITHIN NEARBY MOLECULAR CLOUDS <i>F. Boulanger, E. Falgarone, J. L. Puget, and G. Helou</i>	136	195-F5
ON THE VALIDITY OF EFFECTIVE-MEDIUM THEORIES IN THE CASE OF LIGHT EXTINCTION BY INHOMOGENEOUS DUST PARTICLES. <i>J.-M. Perrin and P. L. Lamy</i>	146	195-G4
TEMPERATURE BEHAVIOR OF INFRARED SPECTRA OF POLYCYCLIC AROMATIC HYDROCARBONS AND THE UNIDENTIFIED INFRARED BANDS <i>A. Blanco, S. Fonti, and V. Orfino</i>	152	195-G12
SUBPARSEC-SIZE H I CLOUDLETS ASSOCIATED WITH ORION A <i>Paul P. van der Werf and W. M. Goss</i>	157	196-A5
HIGH-RESOLUTION, FAR-INFRARED OBSERVATIONS OF NGC 2071 <i>Harold M. Butner, Neal J. Evans II, Paul M. Harvey, Lee G. Mundy, Antonella Natta, and Maria Sofia Randich</i>	164	196-B1
OBSERVATIONS OF THE DENSE GAS IN THE IRAS 16293-2422 OUTFLOW SYSTEM <i>Christopher K. Walker, John E. Carlstrom, John H. Bieging, Charles J. Lada, and Erick T. Young</i>	173	196-B12
DETECTION OF AN EXPANDING H I SHELL IN THE OLD SUPERNOVA REMNANT CTB 80 <i>Bon-Chul Koo, William T. Reach, Carl Heiles, Robert A. Fesen, and J. Michael Shull</i>	178	196-C5
A RADIO/INFRARED/OPTICAL STUDY OF CANDIDATE SUPERNOVA REMNANTS FROM THE CLARK LAKE 30.9 MHz GALACTIC PLANE SURVEY <i>Peter W. Gorham</i>	187	196-D1

	Page	Fiche
TeV GAMMA-RAY PRODUCTION IN ACCRETING BLACK HOLE SYSTEMS..... Patrick Slane and Sanjay M. Wagh	198	196-E1
DYNAMICAL EFFECTS OF ANNIHILATION IN PAIR-DOMINATED WINDS..... Peter A. Becker and Mitchell C. Begelman	203	196-E7
LUMINOSITY PROFILES AND THE EVOLUTION OF SHOCK WAVES IN GENERAL RELATIVISTIC RADIATING SPHERES L. Herrera and L. A. Núñez	212	196-F4
NEUTRINOS FROM TYPE II SUPERNOVAE: THE FIRST 100 MILLISECONDS..... Eric S. Myra and Adam Burrows	222	196-G1
PARAMETERS OF DISKS AROUND YOUNG STELLAR OBJECTS FROM POLARIZATION OBSERVATIONS Pierre Bastien and François Ménard	232	196-G13
SPECTROSCOPIC STUDIES AND ATMOSPHERIC PARAMETERS OF PULSATING DA WHITE DWARF (ZZ CETI) STARS D. Daou, F. Wesemael, P. Bergeron, G. Fontaine, and J. B. Holberg	242	197-A11
FOUR X-RAY-SELECTED CATAclysmic VARIABLES IN THE GALACTIC PLANE P. Hertz, C. D. Bailyn, J. E. Grindlay, M. R. Garcia, H. Cohn, and P. M. Lugger	251	197-B8
CHROMOSPHERIC VARIABILITY OF M GIANT SEMIREGULAR VARIABLES Joel A. Eaton, Hollis R. Johnson, and Robert R. Cadmus, Jr.	259	197-C4
SIMULTANEOUS X-RAY, ULTRAVIOLET, AND OPTICAL OBSERVATIONS OF LMC X-3 A. Treves, T. Belloni, R. H. D. Corbet, K. Ebisawa, R. Falomo, F. Makino, K. Makishima, L. Maraschi, S. Miyamoto, and E. G. Tanzi	266	197-C12
SPECTRAL SYNTHESIS IN THE ULTRAVIOLET. III. THE SPECTRAL MORPHOLOGY OF NORMAL STARS IN THE MID-ULTRAVIOLET..... Michael N. Fanelli, Robert W. O'Connell, David Burstein, and Chi-Chao Wu	272	197-D6
MODELING SOLAR FLARE CONDUCTION FRONTS. I. HOMOGENEOUS PLASMAS AND ION-ACOUSTIC TURBULENCE M. E. McKean, R. M. Winglee, and G. A. Dulk	295	197-F5
MODELING SOLAR FLARE CONDUCTION FRONTS. II. INHOMOGENEOUS PLASMAS AND AMBIPOLAR ELECTRIC FIELDS..... M. E. McKean, R. M. Winglee, and G. A. Dulk	302	197-G1
THE BEAM-DRIVEN CHROMOSPHERIC EVAPORATION MODEL OF SOLAR FLARES: A MODEL NOT SUPPORTED BY OBSERVATIONS FROM NONIMPULSIVE LARGE FLARES..... U. Feldman	322	198-A9
WAVE PROPAGATION IN GASEOUS ACCRETION DISKS..... D. N. C. Lin, J. C. B. Papaloizou, and G. J. Savonije	326	198-B1
ERRATUM		
INTERSTELLAR ABSORPTION ALONG THE LINE OF SIGHT TO σ SCORPII USING COPERNICUS OBSERVATIONS: ERRATUM M. M. Allen, T. P. Snow, and E. B. Jenkins	335	198-B12
ABSTRACTS OF THE ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES, 1990 DECEMBER ISSUE		
THE Ω DEPENDENCE OF PECULIAR VELOCITIES INDUCED BY SPHERICAL DENSITY PERTURBATIONS Alan P. Lightman and Paul L. Schechter	336	198-C1
ON THE NATURE AND IMPLICATIONS OF STARBURST-DRIVEN GALACTIC SUPERWINDS Timothy M. Heckman, Lee Armus, and George K. Miley	336	198-C1
AN OPTICAL POLARIZATION SURVEY OF THE PALOMAR-GREEN BRIGHT QUASAR SAMPLE Graham Berriman, Gary D. Schmidt, S. C. West, and H. S. Stockman	337	198-C2
FAINT BLUE OBJECTS AT HIGH GALACTIC LATITUDE. VI. PALOMAR SCHMIDT FIELD CENTERED ON SELECTED AREA 82 Peter D. Usher and Kenneth J. Mitchell	337	198-C2
PREDICTED PROFILES OF ULTRAVIOLET INTERSTELLAR ABSORPTION LINES..... D. E. Welty, L. M. Hobbs, and D. G. York	338	198-C3
CHROMOSPHERIC H α AND Ca II LINES IN LATE-TYPE STARS..... Richard D. Robinson, Lawrence E. Cram, and Mark S. Giampapa	338	198-C3
A CATALOG OF OBSERVATIONS FOR STELLAR MASERS Priscilla J. Benson, Irene R. Little-Marenin, Tara C. Woods, Joanne M. Attridge, Kristin A. Blais, Dana B. Rudolph, Myra E. Rubiera, and Heidi L. Keefe	339	198-C4
FREQUENCIES OF SOLAR OSCILLATIONS..... K. G. Libbrecht, M. F. Woodard, and J. M. Kaufman	339	198-C4

1990 DECEMBER 1, Number 2

A DIPOLE MOMENT OF THE MICROWAVE BACKGROUND AS A COSMOLOGICAL EFFECT Bohdan Paczyński and Tsvi Piran	341	200-C1
POTENTIAL, VELOCITY, AND DENSITY FIELDS FROM SPARSE AND NOISY REDSHIFT-DISTANCE SAMPLES: METHOD Avishai Dekel, Edmund Bertschinger, and S. M. Faber	349	200-C11

CONTENTS

v

	Page	Fiche
POTENTIAL, VELOCITY, AND DENSITY FIELDS FROM REDSHIFT-DISTANCE SAMPLES: APPLICATION: COSMOGRAPHY WITHIN 6000 KILOMETERS PER SECOND <i>Edmund Bertschinger, Avishai Dekel, S. M. Faber, Alan Dressler, and David Burstein</i>	370	200-E6
MINIMAL SPECTRUM OF LONG-WAVE PERTURBATIONS: IS LINEAR GROWTH CORRECT ONLY IN THE NONLINEAR REGIME? <i>Sergei F. Shandarin and Adrian L. Melott</i>	396	200-G6
DENSITY WAVES IN COSMOLOGY <i>G. F. R. Ellis, C. Hellaby, and D. R. Matravers</i>	400	200-G12
DUST IN QSO ABSORPTION-LINE SYSTEMS <i>J. P. Ostriker, M. S. Vogeley, and D. G. York</i>	405	201-A5
EVIDENCE FOR SMALL HALOS IN GRAND DESIGN SPIRAL GALAXIES <i>Debra Meloy Elmegreen and Bruce G. Elmegreen</i>	412	201-B1
STATISTICAL EVIDENCE THAT GALAXY COMPANIONS TRIGGER BARS AND CHANGE THE SPIRAL HUBBLE TYPE <i>Debra Meloy Elmegreen, Bruce G. Elmegreen, and Andrew D. Bellin</i>	415	201-B6
DIVERGENCE OF NEARBY TRAJECTORIES FOR THE GRAVITATIONAL N-BODY PROBLEM <i>Henry E. Kandrup</i>	420	201-B13
DETECTING CLUSTERS IN GALAXY CATALOGS <i>Colin McGill and H. M. P. Couchman</i>	426	201-C7
A SEARCH FOR SMALL-SCALE X-RAY SURFACE BRIGHTNESS FLUCTUATIONS IN CLUSTERS OF GALAXIES <i>Andrzej Soltan and Daniel G. Fabricant</i>	433	201-D1
THE DUSTINESS, LUMINOSITY, AND METALLICITY OF GALAXIES <i>Sidney van den Bergh and Michael J. Pierce</i>	444	201-D14
A POSSIBLE ORIGIN OF GALACTIC MAGNETIC FIELDS <i>R. A. Daly and A. Loeb</i>	451	201-E12
A SUBDUED INTERPRETATION OF THE VISUAL AND INFRARED EMISSION FROM MERGING GALAXIES: APPLICATION TO NGC 6240 <i>Harley A. Thronson, Jr., S. Majewski, Lara Descartes, and Mark Hereld</i>	456	201-F5
THE OPTICAL EMISSION-LINE NEBULAE OF POWERFUL FAR-INFRARED GALAXIES <i>Lee Armus, Timothy M. Heckman, and George K. Miley</i>	471	201-G11
THE WOLF-RAYET STAR POPULATION IN THE MOST MASSIVE GIANT H II REGIONS OF M33 <i>L. Drissen, A. F. J. Moffat, and M. M. Shara</i>	496	202-C10
FIRST IMAGES OF WATER VAPOR MASERS IN THE GALAXY M33 <i>L. J. Greenhill, J. M. Moran, M. J. Reid, C. R. Gwinn, K. M. Menten, A. Eckart, and H. Hirabayashi</i>	513	202-E1
THE DEVELOPMENT OF THE RED GIANT BRANCH. II. ASTROPHYSICAL PROPERTIES <i>Allen V. Sweigart, Laura Greggio, and Alvio Renzini</i>	527	202-F3
STUDIES OF THE LOCAL INTERSTELLAR MEDIUM. VIII. MORPHOLOGY AND KINEMATICS OF THE DIFFUSE INTERSTELLAR CLOUDS TOWARD ORION <i>P. C. Frisch, K. Sembach, and D. G. York</i>	540	202-G4
DARK MATTER DECAY AND THE IONIZATION OF H I REGIONS IN THE GALAXY <i>D. W. Sciama</i>	549	203-A1
95 GHz METHANOL MASERS NEAR DR 21 AND DR 21(OH) <i>R. L. Plambeck and K. M. Menten</i>	555	203-A9
OPTICAL CORONAL EMISSION LINES FROM EQUILIBRIUM AND COOLING PLASMAS <i>Christopher M. Graney and Craig L. Sarazin</i>	561	203-B3
THE EVOLUTION OF ⁹ Be <i>Elisabeth Vangioni-Flam, Michel Cassé, Jean Audouze, and Yvette Oberto</i>	568	203-B12
IONIZATION PROCESSES IN THE LOCAL INTERSTELLAR MEDIUM: EFFECTS OF THE HOT CORONAL SUBSTRATE <i>Kwang-Ping Cheng and Frederick C. Bruhweiler</i>	573	203-C5
A STUDY OF THE PHASE VELOCITY AND GROWTH OF WAVES AT PARALLEL SHOCKS <i>Ralph B. Fiorito, David Eichler, and Donald C. Ellison</i>	582	203-D1
GAMMA-RAY BURSTER COUNTERPARTS: ARCHIVAL DATA <i>Bradley E. Schaefter</i>	590	203-D11
STELLAR JETS WITH INTRINSICALLY VARIABLE SOURCES <i>A. C. Rago, J. Cantó, L. Binette, and N. Calvet</i>	601	203-F1
RADIO EMISSION FROM SUPERNOVAE. II. SN 1986J: A DIFFERENT KIND OF TYPE II <i>Kurt W. Weiler, Nino Panagia, and Richard A. Sramek</i>	611	203-F13
NOTES ON THE RADIAL VELOCITIES OF 14 O STARS AND THE EMISSION LINES IN THEIR SPECTRA <i>A. B. Underhill and K. K. Gilroy</i>	626	204-A3
DOPPLER IMAGING OF THE DWARF NOVA U GEMINORUM <i>T. R. Marsh, Keith Horne, Eric M. Schlegel, R. Kent Honeycutt, and Ronald H. Kaitchuck</i>	637	204-B1
ON THE INTERPRETATION OF THE EXOSAT PHOTOMETRY OF TWO HOT DA WHITE DWARFS <i>Stéphane Vennes, Harry L. Shipman, and Robert Petre</i>	647	204-B13

	Page	Fiche
THE DETERMINATION OF ELEMENT ABUNDANCES IN THE SOLAR NEIGHBORHOOD FROM B-TYPE STELLAR SPECTRA. II. NON-LTE CALCULATIONS FOR Ar II D. E. Holmgren, P. J. F. Brown, P. L. Dufton, and F. P. Keenan	657	204-C11
VERY DUSTY CARBON-RICH ASYMPTOTIC GIANT BRANCH STARS BETWEEN ~ 1 AND ~ 2.5 KILOPARSECS FROM THE SUN M. Jura and S. G. Kleinmann	663	204-D5
HIGH SPECTRAL RESOLUTION OBSERVATIONS AND KINEMATIC MODELING OF THE 1667 MHz HYPERFINE TRANSITION OF OH IN COMETS HALLEY (1982i), GIACOBINI-ZINNER (1984e), HARTLEY-GOOD (1985i), THIELE (1985m), AND WILSON (1986i) L. E. Tacconi-Garman, F. Peter Schloerb, and M. J. Claussen	672	204-E1
THE PRODUCTION RATE AND SPATIAL DISTRIBUTION OF H ₂ O FOR COMET P/HALLEY Uwe Fink and Michael A. DiSanti	687	204-F4
MODELING OF SOLAR OSCILLATION POWER SPECTRA E. R. Anderson, T. L. Duvall, Jr., and S. M. Jefferies	699	204-G4
INDEX TO VOLUME 364, PARTS 1 AND 2	See Part 2	
INSTRUCTIONS TO AUTHORS	i	205-A1

